

What is claimed is:

1. A process for detecting a complementary DNA
5 fragment which comprises the steps of:

bringing single-stranded sample DNA fragments having
a radioactive label in a liquid phase into contact with a
DNA micro-array having at least two defined areas in each
of which a group of nucleotide derivatives and analogues
10 thereof are fixed under such condition that a group of
nucleotide derivatives and analogues thereof fixed in one
area differs from a group of nucleotide derivatives and
analogues thereof fixed in another area, so that DNA
fragments complementary to a group of nucleotide deriva-
15 tives and analogues thereof are fixed by hybridization to
the area in which the group is fixed;

removing unfixed sample DNA fragments from the DNA
micro-array;

keeping the DNA micro-array in contact with a radi-
20 ation image storage panel containing a stimuable phos-
phor in areas corresponding to the areas on which groups
of nucleotide derivatives or analogues thereof are fixed,
so that the corresponding areas of the stimuable phos-
phor sheet can absorb and store radiation energy of the
25 radioactive label coming from the fixed DNA fragments
through the openings;

irradiating the radiation image storage panel with a
stimulating light, so that the image storage panel re-
leases a stimulated emission from the area in which the
30 radiation energy is stored;

detecting the stimulated emission photoelectrically
to obtain a series of electric signals; and

processing the electric signals to locate the area
in which the complementary DNA fragments are fixed.

2. The process of claim 1, in which area on the radiation image storage panel other than the area of stimuable phosphor is covered by a barrier member.

5 3. The process of claim 1, in which the radiation image storage panel is irradiated with a stimulating light after it is separated from the DNA micro-array.

10 4. A kit for detecting complementary DNA fragments comprising a DNA micro-array having at least two defined areas in each of which a group of nucleotide derivatives and analogues thereof are fixed under such condition that a group of nucleotide derivatives and analogues thereof fixed in one area differs from a group of nucleotide derivatives and analogues thereof fixed in another area, and a radiation image storage panel containing a stimuable phosphor in areas corresponding to the areas on which groups of nucleotide derivatives or analogues thereof are fixed.

20 5. A composite structure comprising a DNA micro-array having at least two defined areas in each of which a group of nucleotide derivatives and analogues thereof are fixed under such condition that a group of nucleotide derivatives and analogues thereof fixed in one area differs from a group of nucleotide derivatives and analogues thereof fixed in another area, and a radiation image storage panel containing a stimuable phosphor in areas corresponding to the areas on which groups of nucleotide derivatives or analogues thereof are fixed, overlaid in order, the radiation image storage panel be positioned in relation to the DNA micro-array in such condition that the areas containing stimuable phosphor of the radiation image storage panel face the areas of the micro-array in which groups of nucleotide derivatives and analogues thereof are fixed.

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